

REMARKS

These amendment and remarks are filed in response to the rejection mailed July 18, 2006. For the following reasons, this application should be allowed and the application passed to issue.

No new matter is introduced by this amendment. The amendments to claim 1 and 6 are supported by originally filed claim 3. Originally filed claim 1 supports the amendment to claim 2. Claim 3 is amended to maintain proper dependency. The specification is amended to correct informalities.

Claims 1-6 are pending in this application. Claims 1-4 have been rejected. Claims 1-3 and 5 have been amended in this paper.

Claims Not Examined

Claims 5 and 6 apparently were not examined, as the Office Action of July 18, 2006 does not mention them. Examination of claims 5 and 6 is respectfully requested. The Examiner is reminded that if claims 5 or 6 are rejected then the subsequent Office Action **can not be made final** because these claims were not previously examined and such a rejection could not have been necessitated by this amendment.

Obviousness Double Patenting

Claims 1 and 3 were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 3 of copending Application No. 10/533,951. The Examiner averred that the instant claims were obvious in view of the '951 application because the claims of the '951 application require paraffin wax with a molecular weight of 300 to 500 and an overlapping density range of the carbon rod.

It is respectfully requested that the provisional obviousness double patenting be held in abeyance until the claims are otherwise allowable. A terminal disclaimer will be filed when the

claims are otherwise allowable, except for the obviousness-type double patenting rejection, if necessary.

Claim Rejections Under 35 U.S.C. §§ 102 and 103

Claims 1 and 4 were rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Nobuaki (JP 3-297063). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested. The following is a comparison between the invention, as claimed, and the cited prior art.

An aspect of the invention, per claim 1, is a positive electrode current collector for a manganese dry battery comprising a carbon rod and either one of a paraffin wax containing hydrocarbon whose molecular weight is 300 to 500 and a microcrystalline wax containing hydrocarbon whose molecular weight is 500 to 800, which is impregnated into the carbon rod. The endothermic amount of the paraffin wax or the microcrystalline wax obtained by differential scanning calorimetry at 20 to 45°C is not more than 1.0 J/g. The carbon rod has a density of 1.55 to 1.75 g/cm³.

The Examiner asserted that Nobuaki discloses a dipping treatment for a carbon rod in a manganese dry cell. Nobuaki teaches paraffin wax with a molecular weight of 300 to 500 or a micro-wax consisting of isoparaffin and cycloparaffin with a molecular weight of 35 to 60. The Examiner considered the claimed endothermic properties to be intrinsic properties of the paraffin wax.

Nobuaki, however, does not anticipate the claimed positive electrode current collector for a manganese battery because Nobuaki does not disclose the endothermic amount of the paraffin wax or the microcrystalline wax obtained by differential scanning calorimetry at 20 to 45°C is

not more than 1.0 J/g, and a carbon rod having a density of 1.55 to 1.75 g/cm³, as required by claim 1.

The Examiner's apparent assertion that the claimed endothermic properties of the wax are inherent is clearly incorrect, as evidenced by Table 1 of the specification. As shown in Comparative Example 1, the endothermic amount of one of the paraffin waxes was 1.40 J/g, which is greater than the claimed not more than 1.0 J/g.

The factual determination of lack of novelty under 35 U.S.C. § 102 requires the disclosure in a single reference of each element of a claimed invention. *Helifix Ltd. v. Blok-Lok Ltd.*, 208 F.3d 1339, 54 USPQ2d 1299 (Fed. Cir. 2000); *Electro Medical Systems S.A. v. Cooper Life Sciences, Inc.*, 34 F.3d 1048, 32 USPQ2d 1017 (Fed. Cir. 1994); *Hoover Group, Inc. v. Custom Metalcraft, Inc.*, 66 F.3d 399, 36 USPQ2d 1101 (Fed. Cir. 1995); *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics, Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992); *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051 (Fed. Cir. 1987). Because Nobuaki does not disclose the endothermic amount of the paraffin wax or the microcrystalline wax obtained by differential scanning calorimetry at 20 to 45°C is not more than 1.0 J/g, and a carbon rod having a density of 1.55 to 1.75 g/cm³, as required by claim 1, Nobuaki does not anticipate claim 1.

Applicants further submit that Nobuaki does not suggest the claimed positive electrode current collector.

Obviousness can be established only by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Kotzab*, 217 F.3d 1365, 1370 55 USPQ2d 1313,

1317 (Fed. Cir. 2000); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992); *In re Fine*, F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). There is no suggestion in Nobuaki to substitute a wax wherein an endothermic amount of the paraffin wax or the microcrystalline wax obtained by differential scanning calorimetry at 20 to 45°C is not more than 1.0 J/g, and a carbon rod having a density of 1.55 to 1.75 g/cm³ into the current collector of Nobuaki, as required by claim 1.

Claims 2 and 3 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Nobuaki (JP 3-297063) in view of Yukifumi et al. (JP 7-272702). This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

The Examiner averred that Nobuaki substantially discloses the claim elements but does not teach the density of the carbon rod. The Examiner alleged that Yukifumi et al. disclose that a carbon rod of high density is used so that it is hard and cushioning is not a consideration. The Examiner concluded that the claimed carbon rod density would have been obvious because discovering the optimum value only involves routine skill in the art.

The combination of Nobuaki and Yukifumi et al., however, do not suggest the claimed positive current collector because Nobuaki and Yukifumi et al. do not suggest the claimed endothermic amount of the paraffin wax or the microcrystalline wax obtained by differential scanning calorimetry at 20 to 45°C is not more than 1.0 J/g, and the relational expression:

$$90 < Y + 50.5X < 100$$

wherein X is the density (g/cm³) of said carbon rod, and Y is the entire endothermic amount (J/g) of said positive electrode current collector obtained by differential scanning calorimetry at 20 to 100°C, and Y>0, as required by claim 2.

There is no suggestion in the in teaching of Nobuaki or Yukifumi et al. to modify the current collector of Nobuaki so that it comprises a wax with having an endothermic amount obtained by differential scanning calorimetry at 20 to 45°C of not more than 1.0 J/g, and the relational expression:

$$90 < Y + 50.5X < 100$$

wherein X is the density (g/cm³) of said carbon rod, and Y is the entire endothermic amount (J/g) of said positive electrode current collector obtained by differential scanning calorimetry at 20 to 100°C, and Y>0, as required by claim 2.

Furthermore, Nobuaki and Yukifumi et al. do not suggest the unexpected improvement in discharge performance provided by the claimed current collector. As shown in Table 1, the combination of the carbon rod having the claimed density and a wax with the claimed endothermic amount in a positive electrode current collector provides an unexpected improvement in discharge performance. Nobuaki and Yukifumi et al. do not suggest the unexpected improvement in discharge performance illustrated in Table 1.

The only teaching of a positive current collector with the claimed wax and carbon rod density is found in Applicants' disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

It is noted that the Examiner simply discounted the features of the present invention by asserting that "it would have been obvious to choose the instantly claimed value through process optimization" and "that discovering the optimum or workable values involve only routine skill in the art" Accordingly, though the Examiner admits Nobuaki and Yukifumi et al. do not disclose

these features, the Examiner alleged that they would have been obvious based on process optimization. However, it is respectfully submitted that the Examiner's reliance on routine skill in the art to allege obviousness of the claimed features is in legal error. The "process optimization" basis for an obviousness rejection can only be relied upon by the Examiner if the *prior art* first recognizes the modified parameter as a result-effective variable. In the instant case, only Applicants have recognized and considered the importance of the claimed parameters (e.g., endothermic amount of wax and density of carbon rod) as result-effective variables, so that the Examiner can not rely on the obviousness-theory of "process optimization" as a basis for asserting obviousness thereof.

The Examiner is directed to MPEP § 2144.05(II)(B) under the heading "Only Result-Effective Variables Can Be Optimized", which sets forth the applicable standard for determining result-effective variables:

A particular parameter must first *be recognized* as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. (citing *In re Antonie*, 195 USPQ 6 (CCPA 1977)) (emphasis added).

In the instant case, the cited prior art appears to be completely silent regarding endothermic amount of the wax and the specifically claimed density of the carbon rod, as achieving a recognized result (indeed, the Examiner does not reference any portion of the cited prior art for this purpose); so that there is no basis for alleging obviousness thereof based on process optimization. Accordingly, it is respectfully submitted that the claimed features would not have been obvious in view of because the cited prior art does not appear to recognize the claimed parameters, **in the particular structure set forth in the claims**, as achieving a recognized result.

Specifically, Nobuaki and Yukifumi et al. fail to satisfy the legal requirement for the prior art to first recognize the endothermic amount of the wax and density of the carbon rod, in the claimed structure, as a result-effective variable. Namely, Nobuaki and Yukifumi et al. are silent as to the endothermic amount of the wax and carbon rod density achieving a recognized result. Accordingly, the cited prior art does not support the Examiner's allegation that the optimum values of the parameters can be characterized as process optimization.

Moreover, the features of the present invention recited in claim 1 provide **new and unexpected results** in relation to discharge performance of manganese dry batteries, as described in the present specification. Only Applicants have recognized and considered the parameters (e.g., endothermic amount of wax and density of carbon rod) in their relation to discharge performance of manganese dry batteries to achieve the disclosed results described in Applicants' specification. Nobuaki and Yukifumi et al. are completely silent as to the improvement in discharge performance achieved by the present invention, and do not enable process optimization of the claimed parameters.

The dependent claims are allowable for at least the same reasons as the respective independent claims from which they depend, and further distinguish the claimed positive electrode current collector.

In view of the above amendments and remarks, Applicants submit that this case should be allowed and passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

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including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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